PLANT AND SOIL

Contents Volume 260, Nos. 1–2 March 2004

Part I

New challenges for rhizosphere research at the entrance of the 21st Century

Selected papers from Symposium 64 organised by the Rhizosphere Working Group of the International Union of Soil Science, as part of the 17th World Congress of Soil Science, August 14–21 2002, Bangkok, Thailand

Guest editor:
Philippe Hinsinger
INRA-ENSAM UMR Rhizosphère & Symbiose, Place Viala, 34060 Montpellier cedex 1, France

Introduction vii

Changes in water extractable metals, pH and organic carbon concentrations at the soil-root interface of forested soils
V. Séguin, C. Gagnon and F. Courchesne 1–17

Zinc mobilisation from a contaminated soil by three genotypes of tobacco as affected by soil and rhizosphere pH
N. Loosemore, A. Straczek, P. Hinsinger and B. Jaillard 19–32

The dynamics of protons, aluminium, and calcium in the rhizosphere of maize cultivated in tropical acid soils: experimental study and modelling
H. Calba, Firdaus, P. Cazevieille, C. Thée, R. Poss and B. Jaillard 33–46

Root traits as tools for creating phosphorus efficient crop varieties
T.S. Gahoonia and N.E. Nielsen 47–57

Proton release of two genotypes of bean (*Phaseolus vulgaris* L.) as affected by N nutrition and P deficiency
C. Tang, J.J. Drevon, B. Jaillard, G. Souche and P. Hinsinger 59–68

Root-induced acidification and excess cation uptake by N_2-fixing *Lupinus albus* grown in phosphorus-deficient soil
J. Shen, C. Tang, Z. Rengel and F. Zhang 69–77

Roots regulate ion transport in the rhizosphere to counteract reduced mobility in dry soil
H. Liebersbach, B. Steingrobe and N. Claassen 79–88

An overview of rhizosphere processes related with plant nutrition in major cropping systems in China
F. Zhang, J. Shen, L. Li and X. Liu 89–99

Roots of *Stylosanthes hamata* create macropores in the compact layer of a sandy soil
G. Lesturgez, R. Poss, C. Hartmann, E. Bourdon, A. Noble and S. Ratana-Anupap 101–109

Estimating length, average diameter and surface area of roots using two different Image analyses systems
M.L. Himmelbauer, W. Loiskandl and F. Kastnek 111–120

Part II

Regular articles

Post-fallow decomposition of woody roots in the West African savanna
R.J. Manlay, D. Masse, T. Chevallier, A. Russell-Smith, D. Friot and C. Feller 123–136

Decrease in variable charge and acidity of root surface under Al treatment are correlated with Al tolerence of cereal plants
G. Jozefaciuk and A. Szatanik-Kloc 137–145

Asynchronous fluctuation of soil microbial biomass and plant litterfall in a tropical wet forest
H.H. Ruan, X.M. Zou, F.N. Scatena and J.K. Zimmerman 147–154

Effects of regulated deficit irrigation under subsurface drip irrigation conditions on water relations of mature almond trees
P. Romero, P. Botia and F. Garcia 155–168

Effects of regulated deficit irrigation under subsurface drip irrigation conditions on vegetative development and yield of mature almond trees
P. Romero, P. Botia and F. Garcia 169–181

Elevated [CO_2] effects on herbage production and soil carbon and nitrogen pools and mineralization in a species-rich, grazed pasture on a seasonally dry sand
D.J. Ross, P.C.D. Newton and K.R. Tate 183–196

Loci underlying resistance to manganese toxicity mapped in a soybean recombinant inbred line population of 'Essex' x 'Forrest'
My.A. Kassem, K. Meksem, C.H. Kang, V.N. Njiti, V. Kilo, A.J. Wood and D.A. Lightfoot 197–204

Modeling soil-root water transport with non-uniform water supply and heterogeneous root distribution
L. Bruckler, F. Lafolie, C. Doussan and F. Bussières 205–224

Using stable oxygen isotopes to quantify the water source used for transpiration by native shrubs in the San Luis Valley, Colorado U.S.A.
R.A. Chimner and D.J. Cooper 225–236

Evaluation of the roles of two compatible solutes, glycine betaine and trehalose, for the *Acacia senegal–Sinorhizobium* symbiosis exposed to drought stress
L.A. Räsänen, S. Saijets, K. Jokinen and K. Lindström 237–251

Measurement of N fluxes and soil N in two arable soils in the UK
J. Webb, S. Ellis, R. Harrison and R. Thorman 253–270

The effect of manganese supply on exudation of carboxylates by roots of lucerne (*Medicago sativa*)
M.J. Gherardi and Z. Rengel 271–282

Effects of pH on mycorrhizal colonisation and nutrient uptake in cowpea under conditions that minimise confounding effects of elevated available aluminium
A. Rohyadi, F.A. Smith, R.S. Murray and S.E. Smith **283–290**

Foliar chemistry of balsam fir and red spruce in relation to elevation and the canopy light gradient in the mountains of the northeastern United States
A.D. Richardson **291–299**

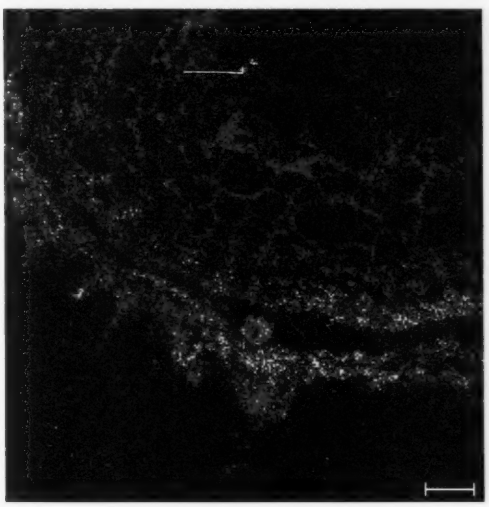
Double pot and double compartment: Integrating two approaches to study nutrient uptake by arbuscular mycorrhizal fungi
I.M. Cardoso, C.L. Boddington, B.H. Janssen, O. Oenema and T.W. Kuyper **301–310**

Quantifying the regional source strength of N-trace gases across agricultural and forest ecosystems with process based models
K. Butterbach-Bahl, M. Kesik, P. Miehle, H. Papen and C. Li **311–329**

Instructions for authors **331–334**

Electronic journals at
KluwerOnline
WWW.KLUWERONLINE.NL
Contact your librarian for more information

Cover Photo: TOF-SIMS (Time of flight Secondary Ion Mass Spectrometry) map of the cumulative distribution of Al (green), Mn (blue) and Ca (red) for a root-rhizosphere cross section collected in a stand of aspen (*Populus tremuloides*) in a clayey soil from the Rouyn-Noranda area in Québec, Canada.

Photo courtesy of Dr. William Skinner, Senior Research Fellow, Ian Wark Research Institute, University of South Australia, Mawson Lakes Campus, South Australia 5095, Australia.

Plant and Soil Vol. 260, pp. 1–17.